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Science and Medicine Vacc

As 202 isuse of VAE apace

Misuse of the VAERS database to spread fear, uncertainty, and doubt about vaccines has been a favorite technique of antivaxxers for decades. Unfortunately, 2021 was the year when this particular antivax trope was turbocharged, and public health messaging seemed powerless to counter it.

David Gorski on December 20, 2021

Tweet

Last year around this time, I wrote about how 2020 had been a year of physicians behaving badly—or perhaps I should say more badly than even before the pandemic, when they behaved plenty bad. Of course, we've long documented on this blog doctors and scientists behaving badly, be they quacks, antivaxxers, grifters, or cranks, but the arrival of the COVID-19 pandemic provided a golden opportunity for quackery to the point that "magic dirt" and nebulized hydrogen peroxide (for example) have been peddled as cures for COVID-19 and turbocharged antiscience conspiracy theories even more than they had been a year ago. As I sat down yesterday to consider what to write—too many possible topics, I fear!—I rapidly encountered a piece of misinformation about vaccines of the sort that has dominated 2021 and looks to continue to be a major antivaccine technique to spread fear, uncertainty, and doubt (a.k.a. FUD) about COVID-19 vaccines in 2022; so I thought I'd discuss it now. I had thought about saving this topic for a year-end post next week, but it's on Joe Mercola's website, which means that it will disappear by tomorrow. The reason is that a few months ago, in a pique about "censorship", über-quack "Dr." Mercola removed all the articles from his website and set all new articles to "expire" and disappear after 48 hours. (Mercola also set his robots.txt file to exclude all his articles from being archived by the almighty Wayback Machine over at Archive.org). So I thought I should write about Jessica Rose now, as she appears in an article from Sunday titled "What the VAERS Data Tell Us About COVID Jab Safety".

VAERS, of course, stands for Vaccine Adverse Events Reporting System. Misuse of VAERS by antivaxxers (and those who claim not to be antivaccine but frequently repeat the same sorts of tropes that antivaxxers do about COVID-19 vaccines) has been a frequent topic on this blog in 2021, and this interview with Jessica Rose illustrates the various techniques used by antivaxxers like Mercola (and Robert F. Kennedy, Jr., who has had a regular weekly "update" of VAERS reporting for several months now) and thus is worth writing about again, given that Jessica Rose appears to be a rising star in the antivaccine movement and a veritable font of antivaccine disinformation since she was mentioned in passing the first time in a post that I wrote a couple months ago about antivaxxers targeting Orthodox Jewish communities in Brooklyn with antivaccine disinformation and conspiracy theories.

Just who is Jessica Rose, anyway?

Given that I haven't taken the time to deconstruct disinformation peddled by Jessica Rose, I thought it would be worth briefly looking into her background before looking into the VAERS misuse and conspiracy theories that she's peddling. In Mercola's article, he describes Rose thusly:

> Jessica Rose, Ph.D., a research fellow at the Institute for Pure and Applied Knowledge in Israel, has taken a deep-dive into the U.S. Vaccine Adverse Events Reporting System (VAERS), and in this interview she shares the details of what she's finding.

In the transcript of the interview, Mercola is even more effusive:

> And we're going to be talking to Jessica Rose, who has an interesting panoply of amazing serendipities. And she has accumulated the skill set that is almost optimized for helping us understand what's going on. She is a computational biologist. I don't know what that means, but it sounds cool. And she has post-doc degrees in two of my absolute favorite fields. And if I had to get a Ph.D., I would get Ph.Ds. in these, is molecular biology and biochemistry. And then she also is a surfer. Even though she's a native Canadian, she caught the bug and actually did her postgraduate training in Israel, where she was able to apply that bug to surfing and was going to go to Australia to surf, but we know what happened. The COVID hit, and she could not go. So now she had to come up with something else. And she decided, "Well, I'm going to be a programmer, I'm going to code." So she picked an obscure program that actually I've never heard of until this. It's called R, which I think is words for statistics and graphics. And so she used that. And she said, I'm going to work on the VAERS database, and boy oh boy, she'd been working at it. And she's come up with the most amazing pieces of information that is out there. You are going to be deeply grateful for what she's done the last two years if you're listening this conversation. So with all that backstory, welcome, and thank you for joining us.

Talk about a self-refuting introduction. No, as a computational biologist, Rose does not have a "skill set almost optimized for helping us to understand what's going on". Let's put it this way. Computational biology alone does not provide one with a skillset "optimized" to deal with the VAERS database. That would also require training in epidemiology, infectious disease, pharmacosurveillance, and a deep knowledge of how VAERS works, and not just the knowledge how to misuse the database to show what you want it to show about vaccines. Indeed, on her LinkedIn profile, Rose describes her skills thusly:

> Experienced Postdoctoral Researcher with a demonstrated history of working in the higher education industry. Strong research professional skilled in Protein Purification, Longboarding, DNA Extraction, Cell Culture, X-ray crystallography, PCR, technical writing, Structural Biology software and a lot more.

That's all well and good, but it's as I expected. Her background is more in the sort of computational biology that looks at protein structures and bioinformatics related to DNA sequences than it is to the sort of mathematical and statistical skill set necessary to delve into VAERS with any credibility. A perusal of her curriculum vitae, which is included on the profile, confirms my assessment, particularly her publication record, which includes a lot of molecular biology and virology, but nothing in the way of epidemiology.

Even less auspicious still is that Rose now works for IPAK. You might recall IPAK as the Institute for Pure and Applied Knowledge, a cringeworthy name that immediately makes one suspicious of its science. IPAK is a dubious "institute" set up by an antivaxxer about whom I've written a number of times here and elsewhere, James Lyons-Weiler. Before the pandemic, Lyons-Weiler was attacking studies showing that autism is primarily genetic, trying to argue that the MMR vaccine causes autism, and teaming up with antivaccine pediatrician Paul Thomas to publish bad studies about aluminum adjuvants. (Lyons-Weiler also teamed up with Thomas to do a typical "vaxxed/unvaxxed" study that purported to claim that unvaccinated children are healthier, which was—surprise! surprise!—retracted.) Since the pandemic, unsurprisingly Lyons-Weiler shifted quickly to COVID-19, claiming in January 2020 that the novel coronavirus that was raging through Wuhan at the time had been the result of a failed SARS vaccine, thus presaging the "lab leak" conspiracy theory by many months, and then, a few weeks later, claimed (mistakenly) hat he had "broken the coronavirus code". Let's just say that if you're a good scientist doing good work, you would be highly unlikely ever to work for an "institute" like IPAK.

Still, it's not enough simply to show that Jessica Rose lacks the qualifications to undertake the analyses she's done and that she works for a disinformation institute that's been spreading FUD about vaccines for years now. Let's look at her claims and activity, the most famous of which is that COVID-19 vaccines are killing tens of thousands of people without being detected and that the government is covering it up.

Antivaxxers and VAERS

As antivaxxers always do, Mercola starts his article by talking up VAERS as the best vaccine safety monitoring system there is, as though it were the be-all and end-all of vaccine safety surveillance:

> VAERS, despite flaws and drawbacks, is one of the greatest tools we have to evaluate vaccine safety. It was implemented as a consequence of the 1986 National Childhood Vaccine Injury Act. While vaccine companies were given blanket immunity against liability for adverse reactions under this law, VAERS was created to collect injury reports in a centralized database so that the post-marketing safety of childhood vaccines could be monitored.
>
> The system was actually launched in 1990, so we have three decades' worth of data to compare trends against. Granted, vaccine injuries are notoriously underreported. Investigations have found only 10%[1] to as little as 1%[2,3] of injuries are reported.
>
> When it comes to the COVID jab specifically, calculations[4] by Steve Kirsch, executive director of the COVID-19 Early Treatment Fund, suggest injuries are underreported by a factor of 41. But despite that and other shortcomings, VAERS can still provide valuable information about a given vaccine.

I've discussed why the idea that VAERS is the be-all and end-all of vaccine safety monitoring is wrong on a number of occasions, but I always like to preface such remarks by simply noting something about discussions of VAERS by antivaxxers. Notice how antivaxxers always cite VAERS and only rarely, if ever, cite other, much better and more reliable, vaccine safety monitoring databases, such as the Vaccine Safety Datalink (VSD), the Clinical Immunization Safety Assessment (CISA) project, or FDA's Post-licensure Rapid Immunization Safety Monitoring System (PRISM) Antivaxxers also seem to like to represent VAERS simultaneously as the best system to find adverse events (AEs) from vaccines, even while also claiming it's awful due to underreporting (as above), which means (to them) that all the horrible things in VAERS are really a lot more common than "they" want you to think.

VAERS is, of course, what is known as a passive reporting system in that it relies on doctors, nurses, healthcare workers, and, yes, people receiving vaccines (or their families) to report AEs after vaccines. As a system, it was never intended to provide an accurate estimate of the frequency of AEs related to vaccines, but rather to serve as an early warning system, a "canary in the coal mine", if you will, for possible new vaccine-related AEs. In other words, VAERS is a hypothesis-generating, not a hypothesis testing, system, and its hypotheses are tested using better systems, like VSD, CISA, and PRISM. In contrast to VAERS, these systems are active reporting systems in that electronic health records are actively monitored for AEs after vaccination in order to identify potential signals; there is a lot less bias that way and a lot less potential for misreporting.

But back to VAERS. The main problem with using VAERS to estimate the frequency of AEs after vaccination is that, in essence, anyone with access to the Internet, mail, or the telephone can report anything to VAERS, as was demonstrated by bloggers years and years ago when one autism advocate filed a report claiming that the flu vaccine had turned him into The Incredible Hulk and another claimed a vaccine had turned his daughter into Wonder Woman. Both reports were accepted. In fairness, ultimately someone from VAERS did contact these people to ask about the reports, and the reports were removed. However, had they refused, reports that vaccines might turn one into the Hulk or Wonder Woman might still be in the database.

In any event, this particular criticism, that anyone can enter anything into VAERS, clearly rankles antivaxxers, as Mercola goes on to write:

> A common attempt to explain away the VAERS data by so-called fact checkers is to say that it's unreliable because anyone can file a report. This is pure hogwash. Yes, anyone can file a report, but there are penalties for filing a false report, and the filing is time-consuming and exacting. We can be quite certain there's no over-reporting going on.

Note the implied straw man. No, no one is claims that VAERS is unreliable primarily because lots of people are reporting fake AEs such as being turned into fictional monsters and superheroes. Rather, we point out these examples merely as part of the discussion of how VAERS reports represent raw, unadjudicated data, with no ability to demonstrate causation. Antivaxxers leap to the assumption that any AE entered into VAERS must have been caused by the vaccine, but that is simply not the case. As I've discussed time and time again, raw VAERS data cannot establish causation, as, by its very nature, it cannot establish reliable estimates for the incidence of a given AE.

Moreover, contrary to Mercola's claim that we can be "quite certain there's no over-reporting going on", we can actually be quite certain that VAERS has been gamed multiple times in its 30 year history. For instance, one of the earliest times I wrote about VAERS was in 2006, when I discussed a study that examined how vaccine litigation could influence VAERS reports. Using VAERS reports from 1990 to 2003, the study found "most case reports to VAERS that were related to overdose, neuropathy, and thimerosal were related to litigation", as were "many cases" that were related to "autism and mental retardation". Since we now know with a great degree of certainty that vaccination is unrelated to autism, neuropathy, and mental retardation, we know with a great deal of confidence that these reports represented, if not overreporting, misreporting of AEs not related to vaccination as though they were. The study concluded, "This review shows a previously undisclosed rise in the number of reports to the VAERS related to pending litigation for vaccine injury." In other words, this is not a new problem with VAERS.

In the discussion, the authors noted:

> The findings raise an important question about possible misuse of VAERS in the litigation process. When a study is being used to influence important public health decisions, it is important that reviewers and editors fully understand how the data were constructed and their source. Until now, no one has described the magnitude of litigation-related reporting and how these reports might potentially change the results of studies using VAERS data. Longitudinal studies using VAERS data should explicitly take into account changes in reporting sources like the one described in this article.
>
> It is impossible to determine the effect of these reports on existing analyses because the existing literature does not describe carefully inclusion and exclusion criteria. For the conditions reviewed here, it is apparent that a large enough percentage of reports are being made related to litigation that failure to exclude these will seriously skew trends. This is important for vaccines that contain thimerosal, and specifically for the MMR vaccine because of the controversy surrounding its relationship to autism. It therefore is incumbent on the authors who use VAERS data to provide detailed methods sections that describe their inclusion and exclusion criteria. To that end, we are making our SAS code available to interested parties. It is not sufficient simply to reference extraction of the VAERS data set.

In fact, the authors concluded that their estimates of how many VAERS reports were related to litigation were likely conservative and underestimates, because the keywords used in their analysis to identify litigation-related cases were insufficient to the task. In other words, the authors almost certainly underascertained the cases they were looking for. Let's just put it this way. There's a reason why I (and many other science advocates) used to call studies that used unadjudicated raw VAERS reports to estimate changes in prevalence of AEs after vaccination "dumpster diving". More recently, another study showed changes in reports to the VAERS database from California that appeared to be due to the passage of SB 277, the law that eliminated nonmedical "personal belief exemptions" to school vaccine mandates, concluding that the "recent changes in reporting patterns coincident with the introduction of SB277 may indicate that more parents are using VAERS to assist in applying for a medical exemption for their child". In other words, VAERS reports are not nearly as reliable as Mercola (and Rose) want you to believe.

Does any of this sound familiar? Relying on just raw VAERS reports from the database is exactly the mistake that Tracy Høeg, John Mandrola, and Allison Krug teamed up with COVID-19 antimasker and antivaxxer Josh Stevenson to dumpster dive in VAERS to look for myocarditis cases and declared themselves to have been "silenced" when the torrent of criticism of their bad science rolled in.

Also, contrary to claims made by Jessica Rose, Steve Kirsch, Joe Mercola, and RFK Jr. (among many other antivaxxers), underreporting to VAERS is not rampant, at least not in the way they make it seem. It's commonly claimed that only 1% of AEs are reported to VAERS, but that is a misleading statement. As Dr. Vincent Iannelli pointed out a couple of years ago, there is major underreporting for minor AEs, such as fever and pain at the injection site. Of course there is! If your child, for instance, has a fever for a day after a vaccine, are you going to bother to report it to VAERS? Probably not. However, if someone dies soon after a vaccine, you can be damned sure that it will very likely be reported, particularly given the government's implementation of V-Safe, its text messaging system that follows up COVID-19 vaccination with text messages asking if you've had any symptoms since vaccination and reminding you to report them to VAERS if you did. In other words, the more serious the AE, the more likely it is to be reported to VAERS, particularly with the reminders people who opted into V-Safe have been receiving.

This doesn't even take into consideration the innumeracy and sheer lack of plausibility behind Mercola and Rose's claims. Mercola's article states that underreporting of deaths due to COVID-19 vaccines ranges from between 31- and 100-fold, leading him to estimate in his article that the "actual death toll in the US could be anywhere from 278,500 to 898,600."

On to Jessica Rose's claims…

Just "play with VAERS" in Excel and R!

During the interview, Mercola discusses VAERS with Rose, asking her what she found. In response, she urges people to "do their own research" by, well, I'll just quote her:

> I implore everybody to do this … [VAERS] is very accessible. Just go to their website and download the CSV files. You can play with it in Excel, or use whatever is compatible with the CSV file. The OpenVAERS system is even easier to use.
>
> There are three separate files that you can download for the domestic data set, which includes the individual's data, the symptoms or adverse events that they reported (and it can be up to 15 different types), and the injection data …
>
> You can merge them so that, as per [each] VAERS ID, you have a lot more information … That's what I did. All you have to do is count the number of adverse events that have occurred in 2021. In the context of the COVID-19 products, exclude all the other vaccines to isolate the signal, and compare the number of adverse events to the total number of adverse events reported in every single year going back 30 years.
>
> There's absolutely zero comparison. The average number of adverse event reports for the past 10 years is ~39,000, and that includes the adverse event report data for all of the vaccines combined. There are a lot of them …
>
> So we're looking at about 39,000 total adverse events per year [on average for all vaccines], as opposed to 675,942 [adverse events post COVID jab] in the domestic dataset alone [Editor's note: Please note that all data are as of the day of the interview and have not been updated prior to publication]. And this does not include the underreporting factor …
>
> We see the same trend when we isolate standalone adverse events like death. There are over 10,000 [post COVID jab] deaths reported now in the domestic dataset alone, not including the underreporting factor, and in the previous 10 years, the average was 155 deaths for the entire year for all the products combined. This is over 6,000% increase in reporting for deaths.

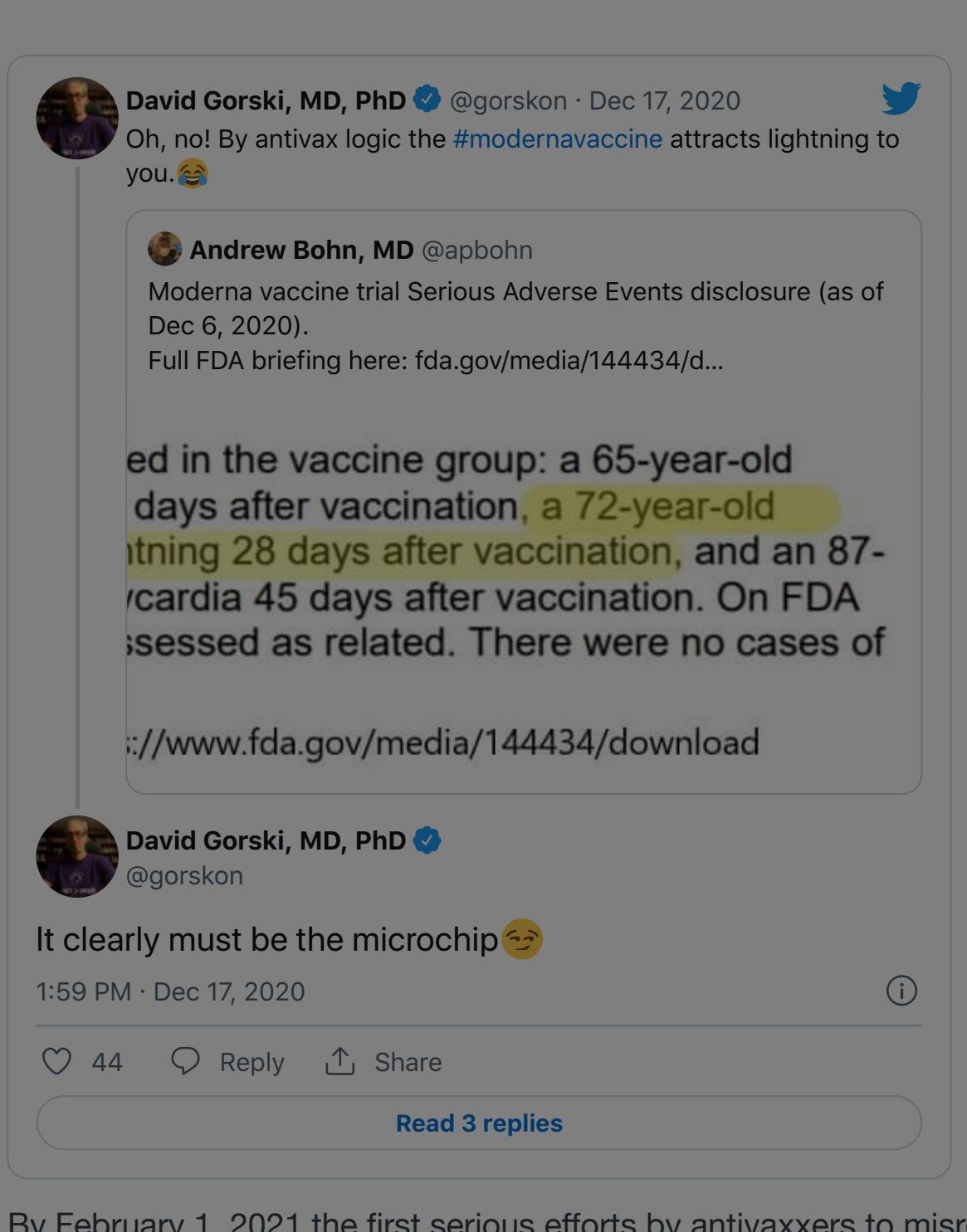
This is exactly what you want: A whole bunch of people with no knowledge of epidemiology or, even more importantly, the limitations of VAERS "playing" with the whole VAERS dataset in Excel or, if they're more sophisticated at computer programming, R. R, for those of you not familiar with it, is a programming language and free software environment for statistical computing and graphing the results. As you might imagine, learning to use R involves a bit of a learning curve, certainly more than Excel does.

Whatever one's skill level, without knowledge of how VAERS works and what its raw data can be used for, you will fall victim to GIGO or "garbage in, garbage out" no matter how good you are with Excel or at statistical analysis using R. That is, of course, exactly what happened to Rose.

Weaponizing VAERS

At this point, let me just point out that before any of the COVID-19 vaccines started rolling out in the US under an emergency use authorization (EUA) a little over a year ago, those of us with long experience deconstructing antivaccine disinformation were warning that VAERS would be weaponized to portray COVID-19 vaccines as deadly. It was entirely to be expected based on the previous misuse of VAERS to falsely link vaccines to autism, premature ovarian insufficiency and infertility, death (including sudden infant death syndrome), and many other health outcomes that we know not to be related to vaccines. So why wouldn't they do it with COVID-19 vaccines? They did, of course, and in terms of antivaccine disinformation 2021 has certainly been the year when the public, news media, and public health officials had their faces rubbed in what we had been describing before the pandemic and warning about as the vaccines rolled out.

The first time I noted the misuse of VAERS reports to portray COVID-19 vaccines as deadly. Before the Pfizer vaccine was issued an EUA, I was pointing out how lawyers game VAERS for their litigation and noted the bad "scientific studies" published by antivaccine physicians and scientists that use VAERS as their data source. By one year ago tomorrow, I was discussing reports of Bell's palsy and syncope from the Moderna clinical trial and how VAERS would likely be used to amplify claims that these AEs were caused by the vaccine, sarcastically Tweeting at one point:



David Gorski, MD, PhD @gorskon · Dec 17, 2020
Oh, no! By antivax logic the #modernavaccine attracts lightning to you.😂

Andrew Bohn, MD @apbohn
Moderna vaccine trial Serious Adverse Events disclosure (as of Dec 6, 2020).
Full FDA briefing here: fda.gov/media/144434/d...

ed in the vaccine group: a 65-year-old
days after vaccination, a 72-year-old
ıtning 28 days after vaccination, and an 87-
/cardia 45 days after vaccination. On FDA
ssessed as related. There were no cases of
://www.fda.gov/media/144434/download

David Gorski, MD, PhD @gorskon
It clearly must be the microchip😏
1:59 PM · Dec 17, 2020

By February 1, 2021 the first serious efforts by antivaxxers to misrepresent VAERS reports as showing that COVID-19 vaccines are deadly were manifesting themselves, and I discussed why they did not show this and were not evidence that COVID-19 vaccines were causing heart attacks and sudden death. At that point, there had been "only" 323 deaths and 9,845 AEs reported to VAERS. By May 2021, conspiracy theorists Michael Yeadon and Peter McCullough were helping Mercola use VAERS to spread the conspiracy theory that the vaccines were part of the "global depopulation" agenda, and by July a "holistic cardiologist" from my part of the country was joining in amplifying misinformation based on VAERS reports.

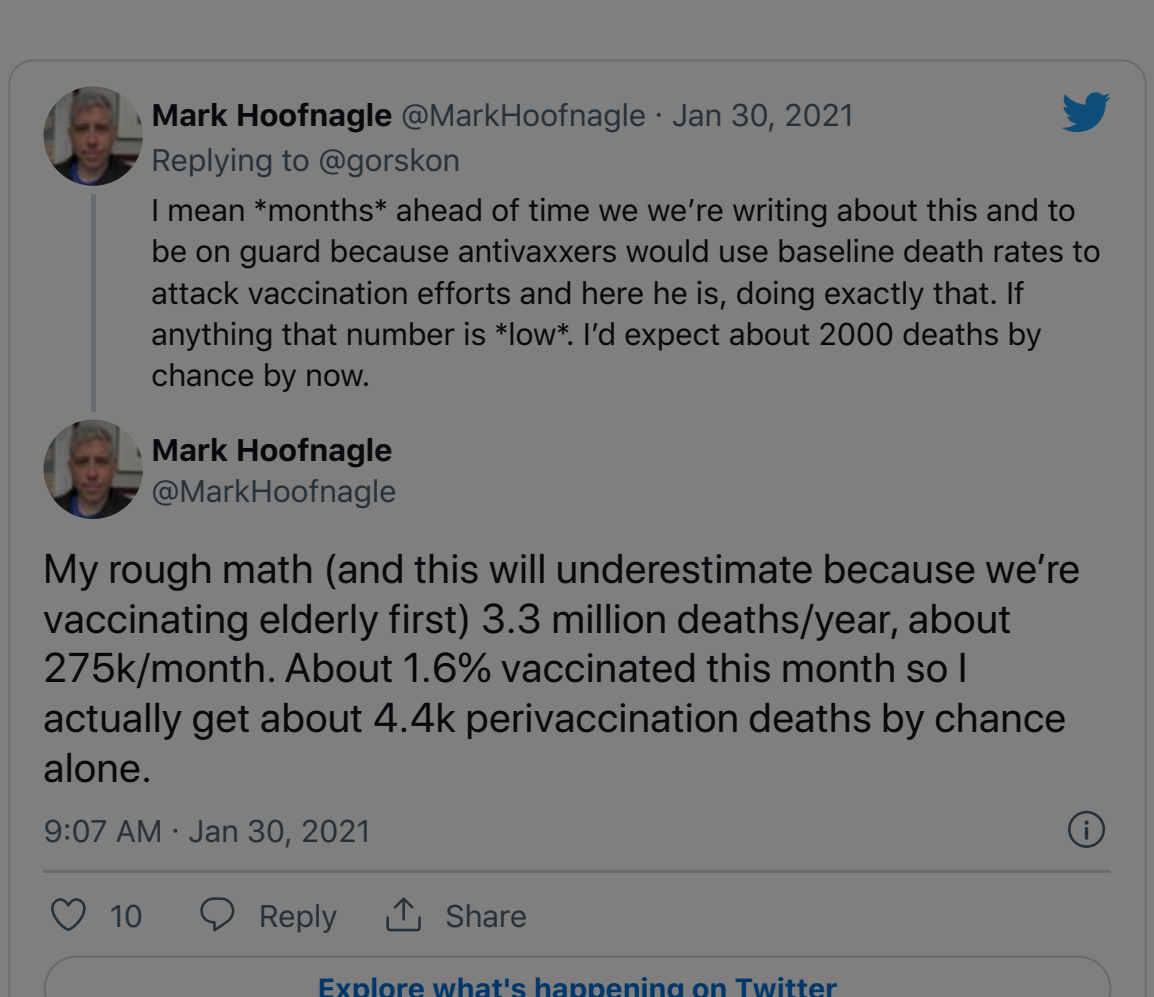
Enter the conspiracy theories…

As I've said many times, all science denial, especially antivaccine pseudoscience, is rooted in conspiracy theory. The central conspiracy theory of the antivaccine movement consists of a claim that "they" are trying to hide the "truth" about vaccines, the "they" usually being the CDC, FDA, the medical establishment, and, of course, big pharma. So, of course, there must be a conspiracy theory to claim why "they" are not taking the dire warnings of people like Jessica Rose seriously, and, of course, there is. The CDC is covering it up, obviously!

And:

> While the U.S. Food and Drug Administration and Centers for Disease Control and Prevention outrageously deny that a single death can be attributed to the COVID jabs, it's simply impossible to discount 19,532 deaths[5] (8,986 in the U.S. territories alone[6]) reported as of November 26, 2021. As noted by Rose:
>
> > It's not even statistically plausible to say that not one death out of 10,000 was caused [by the shot]. It's not scientific to say that … Those people, not 100% of them would have died anyway? That's not how life works.

Actually, it is. I've discussed on many occasions now the baseline rate of e.g. deaths, which Rose either doesn't understand or refuses to accept. Let's go all the way back to January to see what I mean, where I will, as I am wont to do, quote Mark Hoofnagle:



Mark Hoofnagle @MarkHoofnagle · Jan 30, 2021
Replying to @gorskon
I mean *months* ahead of time we we're writing about this and to be on guard because antivaxxers would use baseline death rates to attack vaccination efforts and here he is, doing exactly that. If anything that number is *low*. I'd expect about 2000 deaths by chance by now.

Mark Hoofnagle @MarkHoofnagle
My rough math (and this will underestimate because we're vaccinating elderly first) 3.3 million deaths/year, about 275k/month. About 1.6% vaccinated this month so I actually get about 4.4k perivaccination deaths by chance alone.
9:07 AM · Jan 30, 2021

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- **Nell on Wheels** I would think that if death were among the adverse events that occurred, they would have at least mentioned it and compared the number and causes of deaths between the vaccinated and unvaccinated.…
  Naked Emperors and Laptop Class Doctors · 49 minutes ago
- **Nell on Wheels**
  > Just pointed out that it was sloppy of the NEJM to let it into both the Pfizer and Moderna RCT articles

  Which only goes to show that your understanding of how the studies…
  Naked Emperors and Laptop Class Doctors · 57 minutes ago
- **Mark Rook** Is your understanding that the Barda study included or excluded adverse events that resulted in death? For example, do you think they included all myocardial infarctions, or only those that did not…
  Naked Emperors and Laptop Class Doctors · 1 hour ago
- **Mark Rook** I stand corrected.
  Naked Emperors and Laptop Class Doctors · 1 hour ago
- **Nell on Wheels**
  > ..the Barda study I referenced (https://www.nejm.org/doi/10…) used ICD-9 codes, rather than ICD-10 codes, and ICD-9 does include a separate code for cardiac arrest, which Barda et…

  Naked Emperors and Laptop Class Doctors · 1 hour ago

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English

Remember, this was January, and Mark was estimating over 4K deaths near the time of COVID-19 vaccination by random chance alone.

Now that it's been over a year since COVID-19 vaccines have rolled out, we can redo the estimates that I last did in July. Our World In Data estimates that in the US as of two days ago, 494 million doses of COVID-19 vaccines had been administered leading to 202 million people having been "fully vaccinated," or 61% of the population. (I realize that the question of boosters complicates the definition of "fully vaccinated" now, but this is a back-of-the-envelope calculation designed to give a rough estimate.) The estimate for the baseline death rate that I used back then was roughly 2.4/100,000 per day, which means that for a population of 202 million we'd expect to see an average of ~4,848 deaths per day by random chance alone. Using one year as a rough number, we'd therefore expect to have seen around ~1.77 million deaths in this time period by random chance alone, and that doesn't even count the increase in the baseline death rate due to deaths from actual COVID-19 that has occurred.

The sheer size of those numbers makes Rose's appeal to incredulity sound really rather silly:

> **Jessica Rose:** Nope. They are holding fast to their claim that not one of the adverse event reports of death in VAERS is because of the products. They're holding fast. There are GPs and medical doctors and nurse practitioners who are also spouting this garbage. It's not even statistically plausible to say that. Not one death out of the 10,000 something something were caused, it's not scientific to say that. So actually, I'm happy when people say that because it's really it's going to be really easy to disprove. I think I already have. But showing causation with epidemiological or biological data, data is notoriously difficult, you can do it.
>
> **Dr. Mercola:** Oh, right. I didn't realize it was statistically possible. But well, you know it, probably do.
>
> **Jessica Rose:** Yeah, you can use something called the Bradford Hill criteria, which is a set of 10 criteria that you should satisfy in order to show very strong evidence of causal relationship. And one of the most important of these is temporality, of course, because one thing has to come before the other. And the shorter the duration between those two, the higher the likelihood that there's a causative effect. So when you're talking about people, like percentages of people who died, having died within 24 hours of one of their jabs, let's say you're talking 50%. That's kind of suspicious to me. Yeah. I'm glad you laughed, because it is funny, and they completely deny the causal effect. And I mean, yeah, it's, it's-
>
> **Dr. Mercola:** Just a coincidence.

Actually, it almost certainly is "just a coincidence," just as so many of the problems attributed to vaccines by antivaxxers misusing VAERs were long before the pandemic. My favorite example is a calculation once done over at The Logic of Science five years ago to estimate how many new diagnoses of autism would occur after certain periods of time after vaccination by random chance alone assuming no causation or correlation between vaccines and autism, concluding that, even if there is no relationship between vaccines and autism (and there isn't such a relationship), every year we would expect to see 154 children showing the first signs of autism within a day of vaccination, 1,079 within a week, and 4,623 within a month. The same principle works here, but the numbers are much larger.

Basically, in a population this large receiving vaccines, due to the large baseline rate of deaths that occur every day, day in and day out, just because a certain small percentage of a large population will die of multiple causes every day one expects large numbers of deaths to occur after vaccination by random chance alone. One also does not expect underreporting of deaths, given V-Safe and long term findings that serious AEs after vaccination, of which death is obviously the most serious, are ***not*** underreported to VAERs by a factor of 20 or 100, as Mercola, Kirsch, and Rose claim.

It's also rather hilarious how Mercola and Rose completely ignore the other Bradford-Hill criteria, such as plausibility, consistency, coherence between epidemiological and laboratory findings, biological gradient, and others, and cite temporality *über alles*. That is, of course, why raw VAERS reports are investigated and adjudicated before the CDC uses them in analyses, and even then the CDC then uses other databases, such as VSD, to test whether the safety signals identified in VAERS are reproducible using an active surveillance system.

Rose gets even worse, though. She cites an estimate by tech millionaire turned ivermectin pusher Steve Kirsch, a man who's been falsely claiming that COVID-19 vaccines kill twice as many people as they save (wronger than wrong). Jeffrey Morris demolished (in extreme detail) Kirsch's methodology used to arrive at his estimate of a 41-fold underreporting rate in detail so that I don't have to. Let's just say that Kirsch cherry picked studies and used inappropriate analyses, analogies, and comparisons to come up with this estimate, concluding about Kirsch's underreporting rate (URR):

> It is difficult to see the plausibility of Kirsch's URR estimate of 41x given results from these 3 studies on myocarditis/pericarditis showing URR from 2.0x-2.7x, and the estimate of 41x from the selected anaphylaxis study contrasts with a study done in November 2020 for other vaccines showing UR of just 1.3x-8x, especially problematic for him based on his claim that reporting rates are similar now as pre-pandemic. To justify the high 41x level, he would need more compelling evidence beyond his current speculative statements on why the URR would be much higher, not lower, for deaths, and why the underreporting in 2021 would be so much higher than previous years.

If anything, given the institution of the V-Safe system and the huge publicity surrounding AEs after COVID-19 vaccination, we would expect the URR to be *lower* for COVID-19 vaccines than for vaccines in previous years, *not* higher, especially for the most severe AEs, such as death.

Rose then goes on to claim—of course!—that the nefarious CDC is "deleting" VAERS reports, particularly for children. This is a more difficult conspiracy theory to look at because there could be any of a number of reasons why VAERS ID entries are deleted. Even Rose admits that it could be because more than one report was filed for the same vaccine recipient (e.g., by the doctor and the parents) or for other reasons. A version of this conspiracy theory was going around a few months ago, and the CDC responded by explaining that some 6,000 VAERS reports had been removed from the database because they came from outside the US:

> Curtis Gill, a CDC representative, told Reuters via email that the CDC is aware of an error which took place while data was being uploaded to the page.
>
> "The error resulted in what appeared to be a large spike in the number of deaths reported to the Vaccine Adverse Event Reporting System (VAERS) after COVID-19 vaccination," Gill said. "It happened, accidentally, because of combining foreign and domestic reports, and has been corrected."

I really wish that the CDC would be more proactive about such incidents. Instead of waiting until questions are asked about such anomalies in VAERS data, the CDC should announce when it corrects the data. That wouldn't stop conspiracy theories like the ones Mercola and Rose are spreading, but it could help. Likely there are other legitimate reasons for reports to be removed, but if the CDC isn't painfully aware that antivaxxers are monitoring VAERS for the purposes of anomaly hunting by now, I don't know what else would nudge them to do more. Such removals, which before COVID-19 were just part of the normal maintenance of VAERS and rarely noticed or commented on, even by antivaxxers, are now grist for the conspiracy mill. No doubt Rose will deny that this is what she was looking at, but there's also no doubt that the CDC can no longer do routine quality control of the VAERS database without a lot more transparency, as conspiracy mongers like her are watching for any anomaly that they can weaponize against COVID-19 vaccines.

VAERS: The best and worst system

It's not at all surprising that Jessica Rose would be engaging in dumpster diving of the VAERS database. What was once a common, albeit rather niche, tactic of the antivaccine movement has in the age of the pandemic been weaponized to the point that I've spent considerable time and effort in 2021 dealing with antivaccine propaganda and conspiracy mongering related to VAERS in a way that I had never had to do before for previous vaccines, even if I have been writing about the antivaccine misuse of VAERS since 2005. In the age of COVID-19, VAERS has become a weapon because of its very nature that makes it perfect for this purpose to antivaxxers. It is a completely open database. Anyone can submit a report of an AE after vaccination to it. The complete VAERS dataset (scrubbed of personally identifiable information, such as names) can be downloaded and analyzed by anyone, even without a protocol approved by an institutional review board.

Let's just say that there's a reason that you almost never see antivaxxers like Jessica Rose and Joe Mercola citing the VSD, PRISM, and CISA results to promote their conspiracy theories. They're active surveillance systems, and, far more often than not, analysis of their data fail to support the hypotheses generated by analyses of VAERS with respect to causation.

I frequently repeat the refrains that there is nothing new under the sun when it comes to the antivaccine movement, nor are there any truly new antivaccine arguments or techniques of disinformation. Sure, the same old tropes have been tweaked a bit for COVID-19, but at their core they are no different than the same old tropes that antivaxxers have been using for years. I'm hard pressed to think of any better example than how the VAERS database has been misused and weaponized during 2021 to spread FUD about COVID-19 vaccines. Sadly, I don't see the media or public health officials being all that much better at addressing this technique of disinformation than they were a year ago.

Author

David Gorski

Dr. Gorski's full information can be found here, along with information for patients. **David H. Gorski, MD, PhD, FACS** is a surgical oncologist at the Barbara Ann Karmanos Cancer Institute specializing in breast cancer surgery, where he also serves as the American College of Surgeons Committee on Cancer Liaison Physician as well as an Associate Professor of Surgery and member of the faculty of the Graduate Program in Cancer Biology at Wayne State University. If you are a potential patient and found this page through a Google search, please check out Dr. Gorski's biographical information, disclaimers regarding his writings, and notice to patients here.

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Athaic · 5 months ago
Just some apropos XKCD strip
26 ^ | v · Share ›

Lynn Shaffer · 5 months ago
"So she picked an obscure program that actually I've never heard of until this. It's called R, which I think is words for statistics and graphics." OMG. Thank you for explaining that, Dr. Gorski. Let me tell you how un-obscure R is: I've used it many times.

"In the context of the COVID-19 products, exclude all the other vaccines to isolate the signal, and compare the number of adverse events to the total number of adverse events…" Data quality aside, you can't just isolate the signal. You have to develop as many alternative explanations for an observation (or association) as you can, and then investigate all of them. No evidence Rose did anything like that.

"Yeah, you can use something called the Bradford Hill criteria, which is a set of 10 criteria that you should satisfy in order to show very strong evidence of causal relationship." Hill is rolling over in his grave. I will avoid a lengthy diatribe and explain that Hill explicitly stated that what he called his "viewpoints" were not criteria. If you read his investigations from early in the 20th century you will understand how his mind worked.

"However, had they refused, reports that vaccines might turn one into the Hulk or Wonder Woman might still be in the database." Now here is something to chew on. Perhaps we can counteract antivaxxers' use of VAERS by submitting a bunch of positive outcomes after vaccination: "I lost 10/20/30 pounds!" "I'm 85 years old and I can bench 350 lbs now!" "My rash finally disappeared!"
14 ^ | v · Share ›

mike v · 5 months ago
If the vaccines were actually casing deaths, wouldn't you expect the number of deaths to be closer to the number vaccinated rather than the average number of people who normally die every day? And if the government is trying to cover up, why did they suspend the J&J vaccine when there were reports of blood clots? There are way too many people eager to believe everything they see in social media.
14 ^ | v · Share ›

Nell on Wheels · 5 months ago · edited
This just in:

> SARS-CoV-2 RNA was not detected in semen during the period shortly after infection nor at a later time. Mean progressive motility was reduced in 60% of men tested shortly (<1 month) after COVID-19 infection, 37% of men tested 1 to 2 months after COVID-19 infection, and 28% of men tested >2 months after COVID-19 infection. Mean sperm count was reduced in 37% of men tested shortly (<1 month) after COVID-19 infection, 29% of men tested 1 to 2 months after COVID-19 infection, and 6% of men tested >2 months after COVID-19 infection. The severity of COVID-19 infection and the presence of fever were not correlated with sperm characteristics, but there were strong correlations between sperm abnormalities and the titers of SARS-CoV-2 IgG antibody against spike 1 and the receptor- binding domain of spike 1, but not against nucleotide, in serum. High levels of antisperm antibodies developed in three men (2.5%).
>
> Conclusion(s)
> Semen is not infectious with SARS-CoV-2 at 1 week or more after COVID-19 infection (mean, 53 days). However, couples with a desire for pregnancy should be warned that sperm quality after COVID-19 infection can be suboptimal. The estimated recovery time is 3 months, but further follow-up studies are under way to confirm this and to determine if permanent damage occurred in a minority of men.

10 ^ | v · Share ›

WombatMan → Nell on Wheels · 5 months ago
Yet another reason to be vaccinated.
As Athaic's XKCD link shows, the downside to getting infection acquired immunity is you have to catch the disease in the first place.
6 ^ | v 1 · Share ›

DrVanNostrand · 5 months ago
Brace yourselves, people! The mere mention of VAERS on this site is like a bat signal for kooks.
10 ^ | v · Share ›

WombatMan → DrVanNostrand · 5 months ago
Ugh! I was just arguing with someone on Neurologica who didn't understand why Tucker Carlson quoting VAERS data without context or review was misleading at best.
6 ^ | v 1 · Share ›

DrVanNostrand → WombatMan · 5 months ago · edited
Ha! I abandoned that comment cesspool a long time ago. Its only value is that it lets Steve keep up with what all the dumbest internet trolls are saying, so he can mock them on the SGU.
2 ^ | v · Share ›

Dan Riley · 5 months ago
Rose gives annual averages of adverse events without even normalizing for the number of vaccinations? I find mere incompetence highly implausible...
10 ^ | v · Share ›

Athaic → Dan Riley · 5 months ago
I like to say that an average without a standard deviation is meaningless.
I should add that a normalization is needed, too.

My teachers in statistics liked to talk about "centered, reduced averages". I am suddenly much more aware of the wisdom of these words.
8 ^ | v · Share ›

KayMarie → Athaic · 5 months ago
Some measure of variation like standard deviation or confidence interval is really important. Especially in the data sets where the spread 3 times larger than the difference between the means you are comparing.

And yes normalization is also really important. 10,000 cases in a population of 30,000 is a lot different than 10,000 cases in a population of 30,000,000
5 ^ | v · Share ›

Athaic → KayMarie · 5 months ago
There are plenty of jokes about the misuse of averages.
I like the one about the mathematician going hunting. His first shot passes one meter in front of a flock of birds. His second shot passes one meter behind the same flock.
On average, he successfully shot them down.
6 ^ | v · Share ›

KayMarie → Athaic · 5 months ago
I always am amused by the average salary for a graduate from the geography department at UNC-Chapel Hill for the year Michael Jordan graduated.
https://slideplayer.com/sli...
6 ^ | v · Share ›

Christopher Hickie → Dan Riley · 5 months ago
IPAK is a wretched den of pseudoscientific scum and villany.
7 ^ | v · Share ›

SirWired · 5 months ago · edited
In other COVID-related news: I feel so much better knowing that among the non-elderly, it's only the weak and unhealthy that are killed by COVID. Oh, wait: A Covid-Denying Kickboxing World Champion Just Died from COVID

Dude was 40 and scheduled for a Dec 4 fight. (Was disgusted that it was cancelled due to his illness; a "little virus" was not going to stop him.)
20 ^ | v 2 · Share ›

Terrie_S → SirWired · 5 months ago
One of the first ECMO patients in the US was a triathlete is his 30's. We've known from the start that this could hit healthy people, too. https://www.mhealth.org/blo...
10 ^ | v 1 · Share ›

Alokin → Terrie_S · 5 months ago
I'm sure there was an undetected, underlying condition, or some sort of PED involved. /s
6 ^ | v 26 · Share ›

Bilateralrope → Alokin · 5 months ago
Maybe there was. But if an athlete has some undetected condition that makes covid more deadly, how many people who think themselves healthy but have their health monitored less than athletes also have some unknown underlying condition ?

Either covid can kill the healthy, or some unknown number of supposedly healthy people have conditions which let covid kill them. Both situations call for the same response and the same level of worry.

I do see your sarcasm tag.
4 ^ | v · Share ›

metaphysician → Bilateralrope · 5 months ago
My own takeaway is that we, as a society, need to stop treating health status as a signpost of moral worthiness. Sickness is not the result of sin, and a person does not need to meet a certain purity threshold to deserve healthcare.
8 ^ | v · Share ›

Bilateralrope → metaphysician · 5 months ago
Agreed.

But it's also an issue of selfishness. People who don't care about others and think themselves safe because they don't have any conditions that make covid risky.

When the truth is that getting vaccinated is the choice the selfish should make, unless they have conditions that make vaccinating risky.
1 ^ | v · Share ›

FallsAngel → Bilateralrope · 5 months ago
It's also a form of denial. *"I'm not going to get Covid because I have no underlying conditions"*.
2 ^ | v · Share ›

Chris → FallsAngel · 5 months ago
That sentence should end with *… that I know about.* There are lots of genetic things that do not pop up until middle age.
6 ^ | v · Share ›

FallsAngel → Chris · 5 months ago
Well, yeah. I'm just repeating what some of the deniers say.
2 ^ | v · Share ›

Chris → FallsAngel · 5 months ago
Especially the ones who claim if you eat the right diet then you will not get heart disease. To which I ask what is the perfect diet to prevent hypertrophic cardiomyopathy and Long QT.
5 ^ | v · Share ›

KayMarie → Bilateralrope · 5 months ago
I think I missed this the first time around. But yeah, a lot of people who do not currently have a diagnosis that think they are healthy because they don't have a diagnosis often get a diagnosis after some environmental assault triggers something to start acting up or uncovers something that just didn't act up enough to send you off for a round of testing.
3 ^ | v · Share ›

Alokin → Bilateralrope · 5 months ago · edited
That's right, it's very risky from a public health or personal health perspective to claim that there is a level of health or "purity" that is sufficient protection. But there are those who do believe that.

A local cardiologist who doesn't believe in childhoods vaccinations told CNN it's not his problem if other kids get sick because his own children are not vaccinated, saying, "My child is pure." https://bit.ly/3q9Qtsk
7 ^ | v 26 · Share ›

Ryan Bedell → Bilateralrope · 4 months ago
I bet they both had a BMI >25
^ | v · Share ›

Noah Tahl → SirWired · 5 months ago
Damn! Reality can be one tough S.O.B.!
4 ^ | v 1 · Share ›

Windriven → SirWired · 5 months ago
Took one too many boots to the head?
3 ^ | v 2 · Share ›

DevoutCatalyst → Windriven · 5 months ago
Wooden head can't be hurt by mere boots.
3 ^ | v 1 · Share ›

Dude Dave → SirWired · 5 months ago
Yep... and what is amazing to me is when you go to the doctor and test positive for Covid... they send you home and tell you to take aspirin until you can't breathe... then when that happens they ask you to come back to the hospital where they put you on a ventilator and you wait to die... frantically your relatives beg the hospital staff to give you ivermectin... and they refuse... at the end, the hospital staff shames the person dying for not having got vaccinated. The Hippocratic oath slips away... and all the woke people rejoice that they took the jab and are saving humanity... The american medical system is corrupt... and medical doctors are told how to think by Big Pharma...if they dare think differently then hit pieces go out to disparage them. Like Dr. Mary Bowden in Houston Texas. Treated over 2000 patients for Covid. 100% success. No deaths, no hospital visits. Forced to resign. Or.. how about Dr. Robert Karas in Arkansas. Same thing.. prescribes Ivermectin. 100% success. No deaths, no patients sent to the hospital. Currently being "investigated" for prescribing ivermectin. Keep in mind doctors have been allowed to prescribe medicines for off-label use. It is legal for doctors to do this. Has been for decades. Yet... strangely Ivermectin is not allowed to be prescribed in the hospitals as it is not a supported "protocol". How many 100's of thousands of people have died needlessly while we let the drug companies and media along with the corrupt medical experts tell us that what we see with our own eyes is not real... sorry... but vaccine hesitancy is real... and there is a very good reason for it. Stop blatantly lying to us and maybe we might start trusting medical advice again someday.... It doesn't take a genius to compare what is in the VAERS system regarding COVID to what is in the VAERS system regarding other vaccines and realize there is a huge jump in reports for Covid... you can try to disparage those that give warnings about this... but facts are facts... a self described medical expert claiming others are quacks for discussing this seem corrupt to me... why do they have to resort to name calling? present your version of facts and let people make up their own minds.
4 ^ | v 5 · Share ›

Ryan Bedell → Dude Dave · 4 months ago
Be very wary of anyone claiming 100% success in anything medical. Nothing works all the time
4 ^ | v · Share ›

SirWired → Dude Dave · 5 months ago · edited

> what is amazing to me is when you go to the doctor and test positive for Covid... they send you home and tell you to take aspirin until you can't breathe

Except that's not true at all: https://www.covid19treatmen...

> then when that happens they ask you to come back to the hospital where they put you on a ventilator and you wait to die

Neither is that: https://www.covid19treatmen...

> frantically your relatives beg the hospital staff to give you ivermectin

I cannot why imagine why "your relatives" would "beg" for a treatment that not even its proponents think actually works on late-stage patients.

> the hospital staff shames the person dying for not having got vaccinated.

While nobody should be shamed for their treatment choices, the fact remains that the hospitalized and dead patients are unvaccinated *well* out of proportion with their share of the population, in all demographic groups.

see more
7 ^ | v 2 · Share ›

Chris → Dude Dave · 5 months ago · edited
I was tempted to flag this as spam, because it looks like a long evidence free advertisement for a bunch of quacks. Now, you would be much more believable if you posted the PubMed indexed case reports by those "doctors." Though what I really want is a PubMed indexed study that shows ivermectin works better than any of the three vaccines used in the USA. But I am always disappointed because it seems the IVM/HCQ fans do not know what PMID means.

I suspect you do not understand VAERS nor how the quantities affects the math. This has been the largest vaccination program in history. Even the polio vaccination program in the 1950s/1960s pales the vaccine effort of the last two years.
5 ^ | v 1 · Share ›

WLU Moderator → Dude Dave · 5 months ago
That is not an accurate description of the treatment of COVID-19. Giving aspirin in the early stages is useless since clotting is only relevant in the post-infectious hyperlinflammatory stage. Early in the disease you'd want monoclonal antibodies or ideally a vaccine before you even got infected:

https://pubmed.ncbi.nlm.nih...

Ivermectin hasn't been shown to help at *any* stage, prodromal, symptomatic infection, post-viral inflammation, and long COVID. And this is despite it being tested in multiple clinical trials.

Speaking as a non-American, I completely agree - the American medical system is shit unless you are independently wealthy. That doesn't mean ivermectin works.

Where did Drs. Bowden and Karas publish their results? Because if they haven't published their results, we have no idea if they are true or not. Did they actually treat people with 100% success, or did they *assume* 100% success because they didn't get calls from beyond the grave when one of their patients died? And if ivermectin works so well, why does it stop working as soon as you use it in a clinical trial? Is it shy? As for the whole "greedy drug companies" angle...who do you think makes ivermectin? It's not harvested from organic ivermectin trees in ready-to-take pill form.
4 ^ | v 2 · Share ›

bert → SirWired · 5 months ago
after he was fake jabbed.
^ | v 2 · Share ›

Eric Lang · 5 months ago
Jessica Rose's credibility took a hit earlier this year when her paper on myocarditis cases supposedly spiking after Covid-19 vaccination was approved for teenagers, was withdrawn by the publisher.

https://retractionwatch.com...

Affiliation with James Lyons-Weiler's IPAK can't be very good for one's reputation either. Amusingly, L-W has posted on Twitter bragging about all the reading he's doing in preparation for offering an online course on Biology of the Immune System. One of the pictured books is "Immunology Made Ridiculously Simple". Yes, I'm sure his course will offer a deep dive into everything one needs to know on the subject - mainly, how to use appropriately sciency terms one doesn't understand, in order to blast vaccination.
9 ^ | v · Share ›

WLU Moderator → Eric Lang · 5 months ago
Her credibility only took a hit if you adopted an evidence-based approach. If you adopted a conspiracy-based approach, her credibility dramatically increased.
11 ^ | v · Share ›

Heidi_storage · 5 months ago
"Of course there is! If your child, for instance, has a fever for a day after a vaccine, are you going to bother to report it to VAERS? Probably not." My oldest kid ran fevers after every single vaccine until she turned two. The only one I reported to VAERS was when she was running a 103-104 fever for a few days the week following her MMR/chickenpox, and I only did that because it was a fairly high and prolonged fever. (Yes, I'm sure it could have been from a disease, but the timing is right according to the information sheets I got, and I'd been expecting a fever given her reactions to non-live vaccines.)
9 ^ | v · Share ›

Rose Emulator → Heidi_storage · 5 months ago
"The vast majority of vaccine reactions are too minor to report" isn't the burn that antivaxxers think it is.
9 ^ | v · Share ›

RationalMama · 5 months ago
As a fellow PhD in Biochemistry and Molecular Biology, I find Jessica Rose to be an embarrassment to people of my profession. I spent my career in areas related to control of infectious disease, from reviewing vaccine and other countermeasures development to overseeing early drug discovery efforts. I do not understand why Rose went down such a dank rabbit hole, when so many people with the same education manage to do something worthwhile with their education. She certainly is not representative of biochemists or molecular biologists.
7 ^ | v · Share ›

Terrie_S · 5 months ago
One thing that clear about the VAERS dumpster diving is that people are simply number crunching without reading the reports. Many make it clear that the vaccine is probably just coincidental and people are reporting out of an abundance of caution, such as the person who started coughing up blood a couple days after their vaccine -- but that was probably because of the advancing lung cancer.
7 ^ | v · Share ›

RationalMama → Terrie_S · 5 months ago
One VAERS report I read described a patient who was literally on her death bed and her family insisted that she receive the vaccine anyway. Her death hours later MUST have been caused by the vaccine!
3 ^ | v · Share ›

MrPoohead → RationalMama · 4 months ago
They wouldn't be given the vaccine. Duh!
1 ^ | v · Share ›

RationalMama → MrPoohead · 4 months ago · edited
It looks like you are stalking me now, since I have just been deluged with bunch of notifications that you have replied to me on multiple boards other than the one on which I originally replied to you.

I am now blocking and flagging you for harassment.

I am now blocking and flagging you for harassment.

3 ^ | v • Share ›

MrPoohead ➦ RationalMama • 4 months ago

No handlers. My wife will happily confirm I’m untrainable!

^ | v • Share ›

WombatMan ➦ Terrie_S • 5 months ago

Exactly! Why is this concept so hard for some people to understand. Something appearing in VAERS is basically the definition of "Correlation does not equal causation".

3 ^ | v • Share ›

Paulett Sutton ➦ Terrie_S • 5 months ago

I've read a number that listed, suicide, dui, and homicide as COVID vaccine related deaths. WTF.

1 ^ | v • Share ›

Terrie_S ➦ Paulett Sutton • 5 months ago

Healthcare providers must report all deaths temporally related to the COVID vaccines regardless of causality. This is because VAERS is a report collection system only. It's never been intended to be used for number crunching.

1 ^ | v • Share ›

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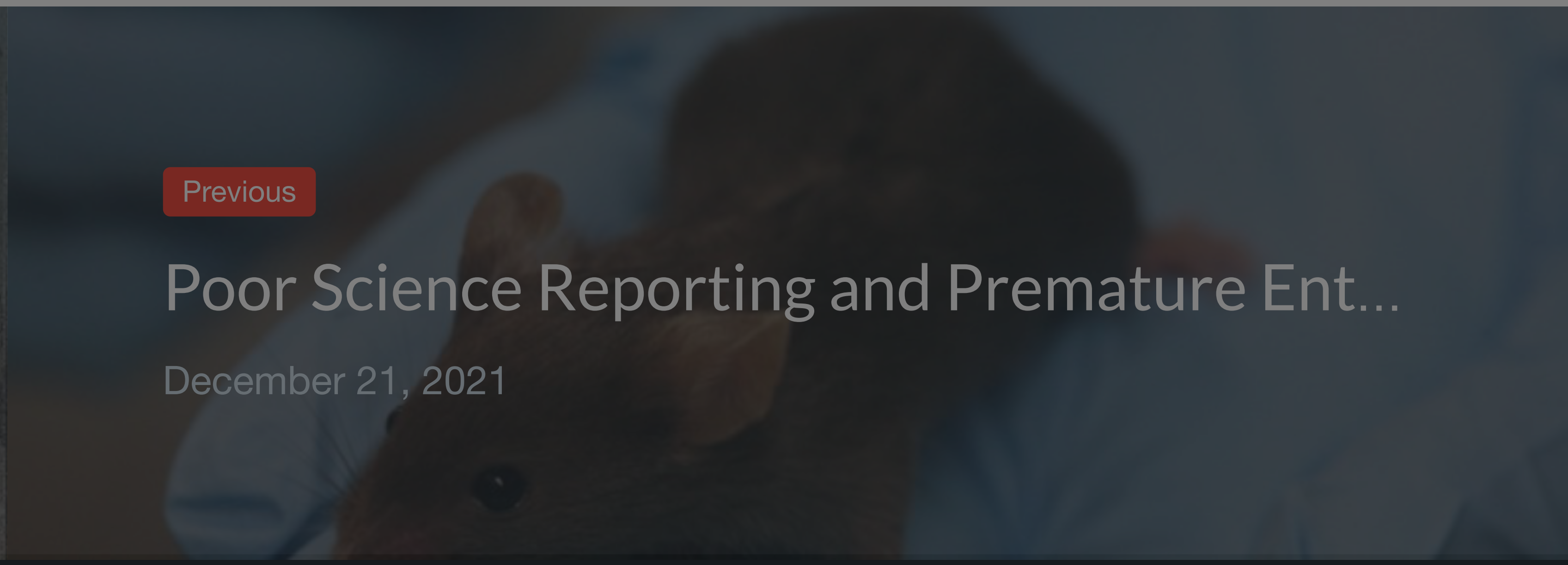

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